



NEWSLETTER

Of The Arboretum of The Barnes Foundation

MERION, PENNSYLVANIA 19066 NUMBER 17: SEPTEMBER 1976

A TOUR OF THE PRAIRIES AND THE OZARKS

JOHN M. FOGG, JR.

The 1976 Spring Tour of the Arboretum School consisted of an eight-day visit to two portions of our country about which most of us had heard much but knew relatively little, namely, the long-grass prairie and the Ozark Mountains.

Our members departed on Tuesday, May 18, and flew to Kansas City, Missouri where we had reservations at the exciting new Crown Center Hotel. This hostelry, constructed on a rocky hillslope, must be considered unusual among the world's hotels by having a five-story waterfall in its lobby!

At this point it should be recorded that the underlying reason for the selection of our 1976 itinerary was an invitation from Dr. John P. Baumgardt, of Cassville, Missouri, a distinguished, author, lecturer and naturalist.

John had visited our Arboretum last summer and having read about our Tours in these *Newsletters* said to me, "Why don't you bring your group out my way some day?" I had taken him up on this and thus it was that he joined our group in Kansas City and for the next week ac-



Fig. 2. *Camassia scilloides*.

companied us as guide, mentor and genial friend. His intimate knowledge of the country and its plants made this a tour which its participants will always recall with much pleasure.

On Wednesday morning, May 19, we drove westward for about a hundred miles to Manhattan, Kansas. The highway traversed open consistently undulating country given over largely to agriculture or grazing and every low roadside cut revealed horizontal layers of ancient limestones of Carboniferous age. (Fig. 1).

We reached our destination in early afternoon and following a late lunch were joined by Dr. Raymond Keen, Chairman of the Department of Horticulture of Kansas State University.

Although Kansas ranks as a prairie state, we had seen nothing answering that description on our morning's drive, due largely to man's intervention and especially the advent of the plow.

Dr. Keen promised to show us a piece of original, unspoiled prairie and he was as good as his word, but we did it the hard way. We parked our cars in a wooded area



Fig. 1. Limestone exposure in eastern Kansas.



Fig. 3. Kansas River from elevated prairie near Manhattan, Kansas.

along the Kansas River at an altitude of 1000 feet and then scrambled 400 feet up a rocky wooded slope to a strip of open grassland at the summit.

Our climb took us through several microclimatic zones. At the outset we were surrounded largely by two species of oak: the mossy-cup (*Quercus macrocarpa*) and the yellow or chinquapin (*Q. Muhlenbergii*). As we ascended, these species were replaced by Indian paw-paw (*Asimina triloba*) and red-bud (*Cercis canadensis*). Nearer the top the dominant plants were sweet sumac (*Rhus aromatica*) and New Jersey tea (*Ceanothus americanus*). At last, somewhat breathless and not without a few scratches, we broke through the woods and emerged on to an extensive strip of unspoiled grassland.

Although we were too early to see the tall grasses (*Andropogon*, *Panicum*, *Stipa* and *Sorghastrum*) which give this type of prairie its name, we were assured that we were walking through them. We were rewarded, however, by seeing many of the characteristic prairie forbs (herbaceous plants other than grasses), among which the following are especially worthy of mention:

Wild hyacinth (*Camassia scilloides*), a handsome perennial with upright racemes of white flowers. (Fig. 2).

Soapweed (*Yucca glauca*). This is like a miniature Joshua tree (*Y. brevifolia*) of our southwestern deserts. We were too early to see it in flower.



Fig. 4. Group in the Konza Prairie.

White camass (*Zigadenus elegans*). A bulbous perennial with narrow alternate leaves and loose racemes of white flowers. All three of the above belong to the Liliaceae.

Blue false indigo (*Baptisia australis*). Three species of *Baptisia* occur on our prairies, but this with its tall racemes of bright blue flowers is perhaps the showiest.

Ground-plum (*Astragalus crassicaarpus*). A decumbent legume with purple flowers and strange ovoid-globular, inflated fruits which resemble plums and are often eaten.

Evening-primrose (*Oenothera missouriensis*). A low-growing species with large yellow flowers which frequently turn reddish at maturity.

We also saw a few plants of shooting star (*Dodecatheon Meadia*), yellow star-grass (*Hypoxis hirsuta*) and at least two species of blue-eyed grass (*Sisyrinchium*). Wood betony or lousewort (*Pedicularis canadensis*) is as much at home on our prairies as in our woodlands and was here in full flower with its unusual bicolor corollas. The Compositae was represented by the silky aster (*A. sericeus*), blazing star (*Liatris pycnostachya*) and prairie-dock

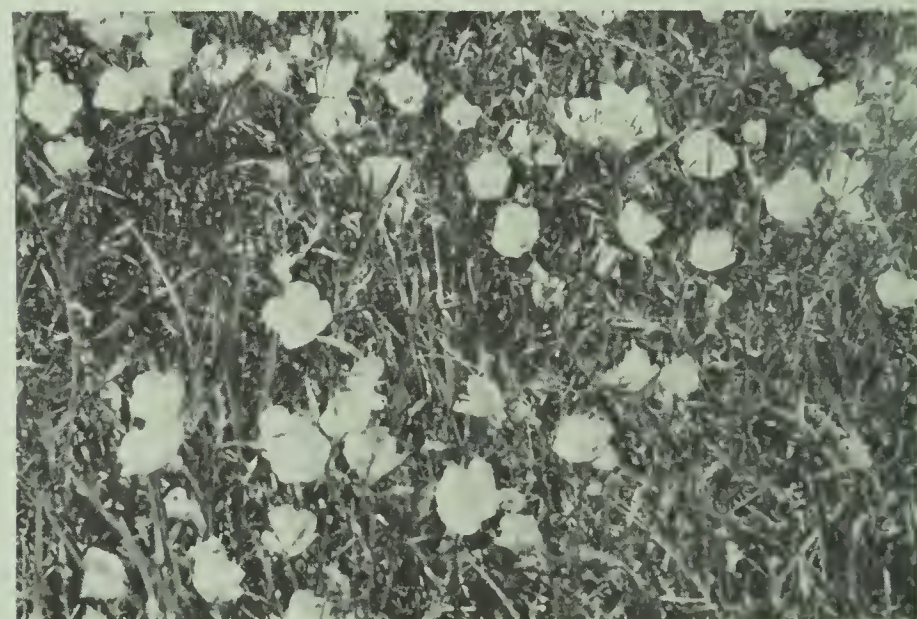


Fig. 5. *Oenothera speciosa*.

(*Silphium terebinthinaceum*), not any of them yet in flower.

When I asked Dr. Keen how it came about that this kind of tableland stood several hundred feet higher than the flat country below he explained that we were walking on tough Cottonwood Falls limestone of Permian age which overlies the softer Carboniferous (in this case Mississippian) limestone beneath it. This is comparable to the situation which exists at Niagara Falls and many other places where resistant strata are superimposed upon layers of softer material. (Fig. 3).

Following dinner Dr. Keen gave us an interesting lecture on the prairies, showing superb slides of their plant and animal life, as well as aspects of the country at all seasons of the year. Before embarking on his slide-show, however, he favored us with a fascinating discourse on, of all things, barbed wire. I suppose that to most of us barbed wire was simply barbed wire. Such is emphatically not the case. Our speaker showed us samples of many different kinds, some of which had been patented. In fact, he presented us, as a kind of centennial souvenir, with lengths of "Twisted Oval", which had been patented in 1876.



Fig. 6. Peony nursery of G. H. Wild & Son.

The following morning we had the pleasure of meeting Dr. Lloyd Hurlburt, who conducted us to the Konza Prairie Research Natural Area, of which he is the director.

This fine tract of about 900 steeply rolling acres of unplowed native grassland not only furnishes a splendid example of original long-grass prairies, but serves as an outdoor laboratory for ecological experimentation. (Fig. 4).

As Dr. Hurlburt pointed out, leaving a prairie alone will not approximate pre-settlement conditions; it needs to be moderately grazed or burned. Since grazing by cattle or bison is impractical in an area as small as this, a program of burning has been adopted. Parts of the tract are therefore burned at varying intervals: one, two, four, and ten years. To help control fires and also to evaluate the effects of burning, mowing treatments are included, resulting in broad swathes which delimit the various plots.

In addition to the species with which we had become acquainted the day before, there were here several novelties: Three species of puccoon (*Lithospermum*) grace our prairies; the one we found here was *L. incisum*, with light yellow flowers and fringed petals. Here in addition to the blue false indigo, was its creamy-flowered relative, (*Baptisia leucophaea*).



Fig. 7. *Parthenium integrifolium*.

The beard-tongues (*Penstemon*) are among the most attractive flowers of our central and western states and it was in this prairie that we saw the first of several. It was *P. grandiflorus*, with thick fleshy leaves and large lavender-blue flowers.

An intriguing member of the Umbelliferae or parsley family is the rattlesnake-master (*Eryngium*). Its several species occur in a wide variety of habitats, but the one found in our prairies is *E. yuccifolium*, its linear, lower leaves resembling those of the genus from which it derives its specific name. Two other members of this family which were much in evidence were prairie parsley (*Polytaenia Nuttallii*) and golden Alexanders (*Zizia aurea*).

We departed from Dr. Hurlburt and his research prairie with a warm expression of thanks for the morning he had devoted to us and a confident feeling that the project in which he was engaged would result in the preservation of one of this country's precious heritages.

Following lunch we headed southward from Manhattan, making several stops en route. The first of these was a brief



Fig. 8. Limestone cliffs at Noel, Missouri.

pause south of Yates Center to appreciate an extensive roadside colony of "white" evening primrose (*Oenothera speciosa*), here with flowers not in the least white, but a luscious pink. Several yards away, however, was a stand in which the flowers were a pure white. (Fig. 5). The genetic heterogeneity in the genus *Oenothera* had been the subject of a life-long study on the part of my good friend, the late Dr. Ralph E. Cleland of Indiana University.

Among several other interesting plants in this little wayside patch of prairie was *Callirhoe aleaeoides*, a delicate member of the mallow family, with rose-colored flowers borne on slender pubescent stems.

At another point, we lingered briefly to enjoy a fine display of Indian paint-brush (*Castilleja coccinea*). We had seen a few scattered plants of this species earlier, but nothing like the solid stand which greeted us here. The members of our party who had been with us in the Chiwaukee prairie in Wisconsin two years ago rejoiced in seeing this brilliantly scarlet-colored plant again. Here, also, was our old friend, the shooting star, a few of them, as so often happens, with white rather than pink flowers; this has been designated as forma *album*. The roadsides in this region were enlivened by great stands of *Penstemon Digitalis*.



Fig. 9. Typical glade in the Ozarks.

Late that afternoon we crossed the state line into Missouri and at the end of our run put in at Joplin, which was to be our headquarters for two days.

Our first visit on the morning of Friday, May 21, was to the nearby George Washington Carver Monument which is administered by the United States National Park Service. This installation, which is located at Carver's birthplace, is a fitting tribute to a remarkable man who devoted his life to botanical research, reformation of agricultural practices and the improvement of his people.

The unglaciated portion of western and southwestern Missouri has numerous residual areas of original prairie. Some of these are of limited area, but each tends to harbor its own assemblage of botanical specialties.

We stopped at one of these near the town of Wentworth and, noted, among other things, the following species:

Mousetail (*Myosurus minimus*). This tiny member of the Ranunculaceae has linear basal leaves and naked scapes bearing small greenish flowers. Since it is quite unknown in the Philadelphia area it generated considerable interest among our tour group.

Birds-foot violet (*Viola pedata*). An attractive and extremely variable species, characteristic of rather poor soils.

Hoary puccoon (*Lithospermum croceum*). This species differs from *L. incisum*, which we had seen previously, in its deep orange-yellow flowers and entire petals.

Purple cone-flower (*Echinacea purpurea*). This was our introduction to a plant which was to become our constant roadside companion for the next few days.

Barbara's buttons (*Marshallia caespitosa*). Anyone seeing the linear basal leaves of this plant for the first time might well be pardoned for thinking it a grass or some other monocot. It is, in fact a composite and one of its relatives (*M. grandiflora*) occurs sparingly in southwestern Pennsylvania.

We drove a few miles out of our way to have a look at the nurseries of G. H. Wild and Sons, which specialize in peonies, iris and day-lilies. We were quite overwhelmed by the magnitude of this operation, in particular the beds of peonies which seemed to stretch all the way to the horizon. (Fig. 6).

A brief stop at a small prairie near Carthage yielded an elegant purple larkspur (*Delphinium Treleasei*) and wild

quinine (*Parthenium integrifolium*), the latter a composite with tight heads of pure white flowers. (Fig. 7).

One of the largest tracts of primeval grassland in this section of the state is the Golden Prairie which is supported by the Missouri Prairie Foundation. Here was a fine display of golden Alexanders and blue false indigo, but there was little that was new to us and the overall effect was somewhat disappointing. John Baumgardt explained that because their spring had been about a month ahead of time (as it had with us) and had been followed by a long period of cold, many of the early flowers had passed flowering and the later ones had not yet come into bloom.

Our last stop that day was near Sheldon, where a piece of prairie land was being demolished by highway construction, but still supported an almost solid growth of Indian paint-brush.

The following morning, after a late start due to tire trouble, we drove south from Joplin through Neosho, the "flower-box city", to visit a park where an ebullient spring issued noisily from a steep cliff.

We then continued southward to Noel where we stopped to admire and photograph the spectacular limestone cliffs which project far over the roadway (Fig. 8). Here John showed us a handsome ruellia (probably *R. strepens*), a genus of the Acanthaceae, which is very rare in Pennsylvania.

Nearby was a formation which in Mexico would be called a cenote—a deep well or sink-hole in the limestone in which the water had a curious opaque quality. John assured us that on a cloudy day it possesses no reflective properties whatever.

From here we proceeded westward toward Roaring River State Park for a brief look at its spring, its fish-hatchery and its fishing stream, alive with fisherman along both banks.

It was about this stage in our travels that we may have been said to be leaving the prairies behind us and entering into the Ozark Mountains. However, prairies are tenacious ecosystems and we continued to see grassland species mostly in narrow tongues or glades which often extend for miles into wooded areas. These remind one somehow of the "balds" in the great Smoky Mountains National Park, but their origin is of a quite different nature. (Fig. 9).



Fig. 10. *Pinus echinata* at Eureka Springs.



Fig. 11. View of Beaver Lake from Lost Bridge Lodge.

In one of these we saw *Delphinium carolinianum* and *Oenothera linifolia*, the latter a handsome evening primrose with narrow, linear leaves.

Early that afternoon we checked in at our comfortable hotel in Eureka Springs, Arkansas, one of the most popular tourist centers in the heart of the Ozarks.

We arrived here on a Saturday when the town was *en fête*. Every shop was adorned with flowers and banners. Paintings, water colors, baskets, pottery, food-stuffs, and much more were displayed along the narrow winding central street with all the gusto of a country fair.

Eureka Springs is the site of a "Passion Play" widely advertised as the largest and most spectacular outdoor and dramatic production in the country. Nightly audiences of 4000 are not uncommon.

The wilderness area known as the Ozarks comprises some 5,500 square miles of southern Missouri and northern Arkansas, with an extension into eastern Oklahoma. It is bounded by five rivers: the Mississippi, the Missouri, the Osage, the Neosho and the Arkansas.

Although they are often called mountains, the Ozarks do not possess the altitudes which characterize the Appalachians to the east. Their highest point, which is in the Boston Mountains in Arkansas, is less than 2600 feet. However, as Richard Rhodes, in his excellent Time-Life book "The Ozarks" says, if they are "less than mountains, they are certainly more than hills."

In another important respect the Ozarks differ from the Appalachians: they lack the folding and faulting which are so much a feature of the latter. Rather they are a plateau of ancient Paleozoic sedimentary rocks, (mostly limestones and dolomites) which has been elevated gently, then dissected by river and stream action. It is for this reason that most of the hilltops are at about the same level.

They are further characterized by an abundance of precipitation, either in the form of rain or snow. This makes for numerous rivers, streams, lakes and, as we shall see later, springs. The action of underground water has also resulted in the creation of a multitude of caves and caverns, with which unfortunately, this narrative is not concerned.

This seems an appropriate place to record our initial feelings of surprise that the prevailingly calcareous Ozarks should support dense stands of oaks (at least a dozen

species) as well as short-leaf or yellow pine (*Pinus echinata*). These are trees usually associated with acid soils and their presence here is due to the existence of layers of chert, a tough quartz-like mineral which frequently crystallizes out of limestone. (Fig. 10).

John Baumgardt left us on Sunday, May 23, to visit his family in nearby Cassville, Mo., so for once we were "on our own". He had, however, provided us with two possible itineraries, and it was the shorter of these two which we adopted. This took us south of Eureka Springs through abundantly wooded country, through Rogers to Pea Ridge Museum and Battlefield, the site of one of the early decisive battles of the Civil War in 1861.

For some miles we followed a numbered route which not only highlighted points of historic interest, but afforded some fine views of the surrounding country.

Lunch that day was at the Lost Bridge Lodge, a sumptuous hotel overlooking Beaver Lake, a sprawling artificial body of water, the fimbriated shore-line of which measures nearly 500 miles. The only appreciable rainfall on our entire tour fell as we drove from Pea Ridge to Lost Bridge and while it did not hamper our progress it produced a cloudy aftermath which prevented our taking good pictures of the charming view across the lake from the terrace of the lodge. (Fig. 11).

After leaving Lost Bridge we stopped briefly at Panorama Point to enjoy a splendid view across many miles of wooded country, then traversed the dam-breast and paused to look back over the man-made lake. (Fig. 12). The steep limestone cliffs nearby were very impressive and Gordon Foster (who is Curator of Ferns at the Brooklyn Botanic Garden) garnered a number of interesting species.

John Baumgardt was back bright and early the next morning and we drove north across the state line into Missouri to visit a rich glade at Wolfpen Gap, one mile north of Eagle Rock.

Here were such novelties as a pink-flowered onion (*Allium stellatum* — I collected seed for our rock garden), a rose-colored fame-flower (*Talinum calycinum* — a relative of *T. teretifolium* of our serpentine barrens), a



Fig. 12. Dam-breast at Beaver Lake.



Fig. 13. Mark Twain National Forest.

lavender-flowered *evolvulus* (*E. Nuttalliana*) and the evanescent winter annual, *Leavenworthia uniflora*. Gordon Foster was delighted to be walking across a turf of adder's tongue (*Ophioglossum Engelmannii*) and my wife, who is a devotee of succulent plants, was happy with a prickly pear (*Opuntia compressa*) and a pretty little annual stone-crop (*Sedum pulchellum*). Then, as a dividend, John showed her the basal rosettes of an American "aloe" (*Agave virginica*), one of the few representatives of this genus found east of our southwestern deserts.

Many botanists over the years have commented on the subtle differences which seem to exist between plants of the Appalachians and their Ozarkan counterparts. All around us in this glade was an aromatic mint which John assured us was the common bastard pennyroyal (*Hedeoma pulegioides*). In its linear rather than ovate-lanceolate leaves it seemed to me to differ from our plant of that name—even the aroma seemed different! Another "stickler" was black-haw (*Viburnum prunifolium*). The upperleaf surfaces of our plant are dull or opaque; here they were quite lustrous and the serration seemed distinctly coarser than in our eastern material. There would seem to be room here for more critical taxonomic study.



Fig. 14. The mill house at Alley Spring.

Thanks to John Baumgardt, we had with us a copy of Julian A. Steyermark's "Flora of Missouri". This is unquestionably one of the finest state floras ever written and we consulted it frequently. Incidentally, this is the same Julian Steyermark whom some of us had the pleasure of visiting in Caracas, Venezuela, last January (see Vol. 16, page 5 of this *Newsletter*).

Later that morning we drove through "Shepherd of the Hills" country, an area which takes its name from the title of Harold Bell Wright's celebrated novel. Whatever may have been its original charm, it has today been downgraded by a rash of commercial establishments which reminded us of Gatlinburg, Tenn.

Continuing eastward, we stopped briefly at Hilda, to admire *Penstemon Cobaea* an unusually large-flowered beard-tongue at one of its very few Missouri stations. Here, also, was *Verbena canadensis*, which was new to us, a pretty little species with purple flowers.

Although many miles on a winding road lay ahead of us, we made several brief stops that afternoon. At one of



Fig. 15. Johnson's Shut-in.

these, near Bull Shoals Lake, John called our attention to the sensitive brier (*Schrankia uncinata*). This member of the subfamily Mimosoideae of the Leguminosae is related to the true sensitive plant (*Mimosa*) and, like its tropical cousin, its leaves respond instantly to the slightest stimulus by folding up. Its rose-colored globular flower heads make it a very attractive plant.

Much of our driving that day took us through disparate sections of Mark Twain National Forest. (Fig. 13). Here, in addition to many species of oaks, were hickory, sassafras and ash. Redbud and flowering dogwood were prevalent and one could readily imagine what a fine show they must make in early spring. Late that afternoon we checked into our hotel at West Plains.

One of the most fascinating features of the Ozarks is the multiplicity of its springs, large and small, some of the former yielding millions of gallons of water a day. These are the result of rain and snow dissolving the porous sedimentary bedrock and forming a vast underground drainage system, or aquifer, which gushes forth through crevices in the rocks or in valleys. We visited three of these on Tuesday, May 25.



Fig. 16. Elephant Rocks.

The first was Alley Spring, near the town of Eminence. This, one of the smaller springs, yields a mere 67 million gallons of water each day. Near it is a three-story mill-house where corn-meal is ground and which contains an old-fashioned country store. (Fig. 14). We were amazed by the clarity of the water in the mill-pond and by the vast rounded mats of water-cress (*Nasturtium officinale*) around its margins.

Dr. Wherry had urged me to collect seeds of *Phlox pilosa* var. *ozarkana* for his Memorial Garden at the Arboretum and since it was abundant here, I was pleased to be able to comply with his request. The genus *Phacelia*, of the Hydrophyllaceae, is always a subject for admiration and here was the lovely *P. hirsuta*, which none of our tour members had ever seen before.

A few miles to the north lies Round Spring, the average daily output of which is a puny 23 million gallons. Here again, the flow issued from a limestone cliff and here again the quieter waters of the flow-off were suffocated by stands of watercress.

A short distance away was the picturesque Current River, beloved of canoeists and fishermen. We stopped briefly to photograph its sylvan loveliness and to observe the American smoke-tree (*Cotinus americana*), a species of calcareous soils which occurs from Missouri and Arkansas south to Alabama and Texas.



Fig. 17. The Climatron in the Missouri Botanical Garden.

The climax of this "Spring Day" was a visit to Big Spring, southwest of the town of Van Buren. The official statement concerning this spring is that it yields "846 million gallons of water per day maximum outflow" and that it is "the largest spring from one head in North America". We were further informed that this is just about the amount of water required to satisfy the daily needs of New York City!

While most of us were lost in admiration over this staggering outflow, Gordon Foster was madly collecting ferns from the surrounding limestone cliffs. His "haul" for the day included the walking fern (*Camptosorus rhizophyllus*), the bulbous bladder fern (*Cystopteris bulbifera*), two spleenworts (*Asplenium Trichomanes* and *A. platyneuron*), purple cliff-brake (*Pellaea atropurpurea*) and the relatively rare Venus-hair fern (*Adiantum Capilliveneris*).



Fig. 18. The Lad Cutak collection in the Missouri Botanical Garden.

There seems to be no end to the special attractions which the Ozarks have to offer and among them are strange formations known as "shut-ins". Accordingly, on the morning of Wednesday, May 26, John conducted us from Poplar Bluff, where we had spent the night, to one of these, known as Johnson's Shut-in. It provided an interesting example of the manner in which a rapidly flowing river (in this case the West Fork of the Black) could erode uplifted igneous rocks of Ordovician origin into a series of multiple channels and miniature cascades. (Fig. 15).

Our final stop that morning was at the Elephant Rocks in the St. Francis Mountains. This is now maintained as a state park and a legend at the entrance to the trail informed us that these rhyolitic granite rocks are more than a billion years old, which places them well back in Proterozoic, in pre-Cambrian times. They are thus among the oldest rocks in the continent of North America. We were further told that for millions of years these rocks had been covered by sedimentary deposits which had since been eroded away, leaving the resistant igneous members in the bizarre shapes and forms which we see there today. Although these rounded boulders look somewhat as though they had been polished by glacial scouring, they are actually well south of the advance of the last ice sheets. (Fig. 16).

Sneakers are the approved footgear in such a spot and as I stood on the shoulder of one of the gigantic "pachyderms", I noticed John Baumgardt similarly situated some distance away. I called over to him, "Doesn't this remind you of Ayres Rock in Australia?". He replied, "Yes, only on a smaller scale."

That night we had a farewell party for John in our hotel room in St. Louis and endeavored to convey to him our appreciation of all that he had done for us in our week together in the prairies and the Ozarks. We had all become greatly enamored of the Ozarks and would certainly welcome a "return engagement", especially if we could persuade John Baumgardt to be our guide.

On the morning of our final day, May 27, we paid a visit to the celebrated Missouri Botanical Garden, which is still known by older citizens of St. Louis as "Mr. Shaw's Garden."

Since Dr. Peter H. Raven, the Director, was out of town, he had very kindly arranged for Dr. Robert J. Dingwall, a member of his staff, to receive us and lead us on a tour of the garden.

The visitor who enters the garden sees first before him the water-lily pools made famous by George Pring, our first great hybridizer of these handsome aquatic plants. Behind this display is the climatron, conceived by Frits Went. It is the first climate-controlled geodesic dome of any appreciable size to be constructed in this country. (Fig.

17). I had had the good fortune to be present on the evening of its dedication in 1961. It has provided the inspiration for similar structures in Milwaukee (Mitchell Park) and Vancouver, B. C. (Queen Elizabeth Park), both of which have been seen by members of these tours.

Although it is its dominant feature, the climatron is only one of the special attractions of this fine garden. There are, among other things, two rose gardens, a Mediterranean house and a desert house. In the last-named we were delighted to find a special section designated as "The Lad Cutak Collection." Lad had been Curator of Cacti and Succulents at the Garden for many years and was internationally known for his writings on these plants. Some of our alumnae will recall with pleasure the splendid lecture he gave us here in the spring of 1970. He died three years later and it is due to many of his friends in St. Louis that this fine memorial has been created in his honor. (Fig. 18).

Dr. Dingwall showed us the extensive new Japanese garden, which is still under construction, and as a final treat conducted us to the magnificent new John S. Lehman Building which houses the library and herbarium. We departed with the realization that we had been privileged to visit one of this country's greatest botanical institutions. That afternoon our tour came to an end as we left for home.

THE NEW HERB GARDEN

MAUREEN E. PRATT

In order to make more space available in the arboretum for the growing of woody plants, the upper section of the formal garden has been turned into an herb garden. This may seem to be a contradiction but, in fact, a good many plants used as herbs are woody. Such common culinary herbs as sage (*Salvia officinalis*), thyme (*Thymus* spp.) and rosemary (*Rosmarinus officinalis*) are classified as subshrubs.

At present the beds contain 198 species from 87 genera in 32 families. The planted area is approximately 872 square feet. This includes annuals, biennials and herbaceous perennials, as well as both hardy and tender subshrubs. The latter will be housed in the greenhouse over the winter. As the collection of woody herbs grows, the non-woody species will gradually be replaced.

The word herb is here used in its broadest sense including any plant used for medicine, seasoning food or household chores. Thus it has been possible to include such plants as *Santolina Chamaecyparissus* an outmoded and probably doubtful cure for ringworm and rue (*Ruta graveolens*) which, when a sprig is worn around the neck, prevents the wearer from contracting the plague.

Visually the new herb garden emphasizes contrasting foliage textures and colors. Silver-and bronze-leaved plants are used as focal points among the varying shades of

green. They are even used effectively in some places to accent each other like silvery curry plant (*Helichrysum serotinum*) as a background for the warm tones of purple basil (*Ocimum Basilicum purpureum* 'Dark Opal').

Special thanks must be offered to Mrs. Joanna Reed, a Barnes alumna, who permitted us to take as many cuttings and divisions as we needed from her own herb collection. There follows a list of species currently growing in this garden:

- Alliaceae
 - Allium sativum
 - A. Schoenoprasum
 - A. tuberosum
- Zingiberaceae
 - Zingiber officinale
- Aristolochiaceae
 - Asarum europeum
- Chenopodiaceae
 - Atriplex hortensis cupreata
 - Chenopodium ambrosioides
 - C. Bonus-Henricus
 - C. Botrys
- Amaranthaceae
 - Amaranthus hybridus
 - hypochochriacus

Caryophyllaceae
Dianthus Caryophyllus

Ranunculaceae
Nigella damascena

Lauraceae
Laurus nobilis

Capparidaceae
Capparis spinosa

Cruciferae
Isatis tinctoria

Saxifragaceae
Heuchera sp.

Rosaceae
Alchemilla vulgaris (mollis)
Filipendula hexapetala
Sanguisorba minor

Leguminosae
Baptisia australis
Glycyrrhiza glabra
Trigonella Foenum-Graecum

Geraniaceae
Geranium sp.
Pelargonium crispum 'Prince
Rupert Variegated'
P. graveolens
P. x nervosum
P. tomentosa

Tropaeolaceae
Tropaeolum majus

Linaceae
Linum flavum
L. perenne
L. usitatissimum

Rutaceae
Ruta corsica
R. graveolens
R. graveolens 'Jackman's Blue'

Theaceae
Camellia sinensis

Guttiferae
Hypericum perforatum

Myrtaceae
Myrtus communis

Umbelliferae
Angelica Archangelica
Anthriscus Cerefolium
Foeniculum vulgare
F. vulgare var.
Levisticum officinale
Myrrhis odorata
Petroselinum filicinum
P. hortense

Plumbaginaceae
Armeria maritima
Limonium vulgare

Asclepiadaceae
Asclepias tuberosa

Boraginaceae
Anchusa azurea 'Dropmore'
A. officinalis
Borago officinalis
Pulmonaria saccharata
Symphytum officinale

Verbenaceae
Lippia citriodora

Labiatae
Agastache Foeniculum
A. rugosa
Amaracus Dictamnus
Calamintha Nepeta
C. sylvatica adscendens
Coleus amboinicus
Conradina verticillata
Cunila origanoides
Hyssopus officinalis
Lavandula angustifolia (officinalis)
L. angustifolia 'Hidcote'
L. angustifolia 'Nana Alba'
L. angustifolia 'Nana Hidcote'
L. dentata
L. multifida
L. Stoechas
Leonurus Cardiaca
Marjorana hortensis
M. Onites
Marrubium vulgare
Melissa officinalis
M. officinalis 'Aurea'
Mentha citrata
M. piperita
M. piperita 'Crispa'
M. Pulegium
M. Requienii
M. rotundifolia
M. rotundifolia variegata
M. spicata
Monarda didyma 'Cambridge Scarlet'
M. punctata
Nepeta Cataria
N. citriodora
N. grandiflora
N. Mussinii
Ocimum Basilicum
O. Basilicum parviflorum
O. Basilicum purpureum 'Dark Opal'
O. canum
O. citriodora
O. crispum
O. minimum
O. sanctum
O. viride
Origanum vulgare
O. vulgare 'Aureum'
Perilla frutescens crispa
Perovskia atriplicifolia
Phlomis fruticosa
Prunella vulgaris
Pycnanthemum pilosum
Rosmarinus lavandulaceus
R. officinalis
Salvia coccinea
S. columbariae
S. Dorisiana
S. farinacea
S. glutinosa
S. guaranitica (ambigens)
S. involucrata
S. leucantha
S. officinalis
S. officinalis 'Icterina'
S. officinalis 'Purpurascens'
S. officinalis 'Tricolor'
S. pratensis
S. rutilans

S. Sclarea
 S. triloba
 Satureja alpina
 S. grandiflora
 S. hortensis
 Satureja montana
 S. montana nana
 S. montana repens
 Scutellaria baicalensis
 Stachys officinalis
 S. olympica
 Teucrium Chamaedrys
 T. flavum
 T. marum
 T. scorodinia
 Thymus adamovicii
 T. balticus
 T. caespititius (azoricus)
 T. x citrodorus
 T. comptus
 T. drucei (britannicus)
 T. epiroticus
 T. glabrescens (loevyanus)
 T. 'Hall's Woolly'
 T. Herba-barona
 T. languinosus
 T. longidens lanicaulis
 T. marshallianus
 T. minus
 T. nummularius
 T. 'Porlock'
 T. praecox Skorpilii (Jankae)
 T. pulegioides Chamaedrys kermesinus
 T. Serpyllum
 T. Serpyllum albus
 T. Serpyllum 'Annie Hall'
 T. Serpyllum aureus
 T. Serpyllum roseus
 T. vulgaris (English form)
 T. vulgaris (French form)
 T. vulgaris argenteus
 T. vulgaris aureus
 T. vulgaris 'Donne Valley'

Scrophulariaceae
 Digitalis purpurea
 Veronica officinalis
 Pedaliaceae
 Sesamum indicum
 Rubiaceae
 Asperula odorata
 Valerianaceae
 Valeriana officinalis
 Campanulaceae
 Campanula Rapunculus
 Trachelium caeruleum
 Compositae
 Achillea Millefolium
 A. Ptarmica 'The Pearl'
 Anthemis nobilis
 Artemisia Abrotanum
 A. Absinthium
 A. albula
 A. Dracunculus sativa
 A. lactiflora
 A. pedemontana procera
 A. pontica
 A. Schmidtiana nana
 A. vulgaris
 Calendula officinalis
 Chrysanthemum Balsamita
 C. Parthenium
 C. Parthenium 'Aureum'
 Helichrysum petiolatum
 H. serotinum (angustifolium)
 Matricaria Chamomilla
 Santolina Chamaecyparissus
 S. Chamaecyparissus 'Nana'
 S. pinnata
 S. virens
 Solidago odora
 Spilanthes oleracea
 Tanacetum vulgare crispum

THE PINK-FLOWERED YELLOW-WOOD

JOHN M. FOGG, JR.

In the fall of 1956 the late Laura L. Barnes obtained from the Brimfield Gardens Nursery in Connecticut a plant labeled *Cladrastis lutea* var. *rosea*. This specimen, despite its badly crowded situation, has flourished and is today a tree 9.8 m. (32 feet) tall.

Although we have been observing this plant carefully over the years, it was not until May, 1976, that it was first seen in flower.

The panicles are horizontal or even somewhat upright, in contrast to the pendulous inflorescences of typical *C. lutea*. The petals are distinctly flushed a delicate pink and at the base of the standard is a distinct yellowish blotch with a narrow reddish margin. It is indeed a handsome variant of the normally white-flowered yellow-wood, a fine old specimen of which is here growing only a few feet away.

Although American yellow-wood (*Cladrastis lutea* (Michx. f.) K. Koch) occurs in rich woods from southern Indiana to southern Missouri and south to northern Georgia and Alabama, there is no mention of a pink-flowered form in Small's "Manual of the Southeastern Flora" (1933). Nor is it listed in other leading floras, such as Steyermark's "Flora of Missouri" or Deam's "Flora of Indiana". Hoffman's "Check List of Vascular Plants of the Great Smoky Mountains", where this is a dominant species, makes no reference to such a color form.

Thinking that this might be a variation known only in cultivation, we looked in vain for some reference to it in such standard works as Rehder's "Manual of Cultivated Trees and Shrubs" (ed. 2, 1940), Bean's "Trees and Shrubs Hardy in the British Isles" (ed. 8, 1970) and Hillier's "Manual of Trees and Shrubs" (1972). However, in Wyman's "Gardening Encyclopedia" (page 234, 1971) occurs the statement: "Var. 'Rosea', a light pink-flowering clone, might well be worth propagating".

Mrs. Elizabeth Farley, our librarian, then called my attention to a mention of a plant as *Cladrastis lutea* 'Rosea' in "The Woody Plants of the Morton Arboretum" (page 40, 1972).

I wrote at once to Dr. Walter E. Eickhorst, Curator of Cultivated Plants at the Morton, requesting information concerning their specimen and he replied that they also had obtained it from the Brimfield Nursery. This was in 1955 — a year before Mrs. Barnes had gotten hers. He added that their plant had flowered in 1970 and called my attention to a statement in Krüssman's "Handbuch der Laubegeholze" to the effect that a tree with pink flowers was growing at the Perkin's Institute for the Blind in Cambridge, Massachusetts.

I then wrote to my friend Nelson Coon, who for many years had been superintendent of the grounds at the Perkin's (not in Cambridge, but in Watertown).

In Nelson's reply to me he stated that he recalls "giving stock to Brimfield years ago (it must have been in the early 40's)" and adds the following:

"There were two *Cladrastis* trees, then about 25 feet high, in two cottage front yards. I do not know if one of them is there yet, but one blew down in the 1938? hurricane — the one in front of "Fisher Cottage" had these nice pink flowers and I suppose, as you do, that it is a natural mutation, as it is seemingly not otherwise known. I can't remember how I sent stock to Brimfield, but in those days that was the choice collection of rare stuff from all over".

The question as to how the Brimfield Nursery acquired this variety is now apparently solved, but the broader one as to how it came to be growing at the Perkin's Institute remains open. Nelson Coon states that before the Institute took it over, the property was the estate of a railroad man by the name of Stickney and that when the school was built the head of it was an interested horticulturist who planted many good things.

Here the trail seems to peter out and one is left to speculate not only as to whether it was the railroad magnate or the first director of the Institute who introduced this tree at Watertown, but also as to whether the pink-flowered form first made its appearance there and is totally unknown in the wild.

It is hoped that someone reading these lines may come forward with additional information concerning the origin and occurrence of this interesting and attractive form.

NOTES FROM THE ARBORETUM

THE STAFF

Dr. Gordon has been awarded a Certificate of Honorary Membership by the Pennsylvania Academy of Science of which he served as President in 1957-58. In June he participated in the sessions of the American Institute of Biological Sciences at Tulane University in New Orleans, where he elaborated on his recent studies on the natural vegetation of Ohio. Dr. and Mrs. Gordon spent their vacation partly in northern New Mexico. In the latter area they had an opportunity to study the vegetation of the coniferous forest, the alpine bog meadows and the pinyon-juniper semi-deserts.

From June 24 to July 11 Mrs. Hopkins served as co-leader of a tour which conducted its members on a visit to many private gardens and homes in England and Wales.

Dr. Marks is on leave of absence for the academic year 1976-77. He will be pursuing research on Lepidoptera in England and his course here will be conducted by his colleague, Dr. Richard W. Fredrickson.

Dr. Penny has been working on a "Students Handbook of the Families of Flowering Plants". This book will include synopses of twenty-six plant families and will be illustrated by Esther McCrea, a former student in the

Arboretum School.

On April 22 a *Kobus Magnolia* was planted in honor of Dr. Fogg on the grounds of the Scheie Eye Institute of the Presbyterian Hospital and on May 12 a group of eight native magnolias was planted and dedicated to Dr. Fogg at Rittenhouse Village in the valley of the Wissahickon Creek. This is believed to be the site where an early botanical garden was established by a sect of German Pietists in the 17th Century. This planting was a gift of the 1976 class of the Arboretum School. From May 13 to 16 Mrs. Farley and Dr. Fogg represented the Arboretum at the annual meetings of the American Association of Botanical Gardens and Arboreta, which were held at Wilmington, Delaware.

It is with deep regret that we record the resignation of Mrs. Elizabeth B. (Betty) Wheeler who for thirteen years had rendered faithful service as secretary to the Arboretum. We consider ourselves fortunate to have obtained as her replacement Mrs. Norman S. (Dottie) Bemis, a former Barnes student, who is well known in horticultural circles throughout the Delaware Valley.

MEXICAN TOUR

In response to numerous requests from our students, plans have been formulated for the midwinter tour of the Arboretum School to visit Mexico in January 1977.

The group will leave Philadelphia on Wednesday, January 5, and fly directly to Mexico City, where four days will be spent in visiting the Archaeological Museum, the pyramids, the botanical garden of the University, the folklore dances at the Palace of Fine Arts and several other features of interest.

On January 10 we shall drive south through Cuernavaca, with its Cortes Palace and Borda Gardens stopping at the Toltec ruins of Xochicalco, and arriving late that afternoon in Taxco, where the entire next day will be spent at leisure.

From Taxco we shall proceed through Puebla and Tehuacan (with its fascinating desert) to Fortin de las Flores (with its gardenia-bedecked swimming pool.)

Following our return to the capital we shall fly to Oaxaca where a whole day will be devoted to visiting the

archaeological sites at Monte Alban and Mitla. We shall also pay our respects to the "Big Tree" at Santa Maria del Tule.

Back in Mexico City, after an afternoon at leisure, we shall head north to Tula with its heroic Toltec statues, then on to San Miguel Allende with its Art Institute and fine private gardens.

The final days of our tour will be spent in Yucatán. We shall fly to Mérida and from there the next day go to see the impressive Mayan ruins at Kabah and Uxmal. Thence to Chichén Itzá where two full days will be devoted to inspecting the most extensive Mayan remains in Mexico.

For those who are interested, an extension of the tour will be arranged to include a visit to the island of Cozumel for complete relaxation — swimming, sun-bathing, snorkeling, fishing, etc.

In all events our return home will be from Mérida via Miami on or about January 29.

LIBRARY ACCESSIONS

The following are among the books recently added to the Arboretum Library:

All about Rock Gardens. W. A. Kolaga. Avenel Books. 1966.

All about Weeds. E. R. Spencer. Dover. 1968.

The Badlands. C. Clark. Time-Life Books. 1974.

A Beachcomber's Botany. L. C. Petry. Chatham Fdn. 1968.

California Spring Wildflowers. P. A. Munz. Univ. Calif. Press. 1961.

In China's Border Provinces: the Turbulent Career of Joseph Rock. S.B. Sutton. Hastings. 1974.

Climate through the Ages. C. E. P. Brooks. Dover. 1970.

Color in the Sky. E. A. Menninger. Horticultural Books. 1975.

Death Valley Wildflowers. R. S. Ferris. Death Valley Natural History Association. 1974.

Diseases of Ornamental Plants. J. Forsberg. Univ. Illinois Press. 1975.

Douglas of the Fir. A. G. Harvey. Harvard Press. 1947.

Dwarf Shrubs. D. Wyman. Macmillan. 1974.

Encyclopedia of Gardening. 4th Ed. N. Taylor. Houghton Mifflin. 1961.

Essentials of Earth History. W. L. Stokes. Englewood Cliffs. 1973.

Fern Growers Manual. B. J. Hoshizaki. A. A. Knopf. 1975.

500 Plants of South Florida. J. F. Morton. E. A. Seeman. 1974.

Flora of the Pacific Northwest. C. L. Hitchcock and A. Cronquist. Univ. Washington Press. 1974.

The Genus Lewisia. R. C. Elliott. Alpine Garden Soc. Bull. 1966.

Greenhouse Gardening. H. T. and R. T. Northern. Ronald Press. 1973.

Growing Wildflowers. M. Sperka. Harper & Row. 1973.

Heathers in Color. B. and V. Proudly. Blandford Press. 1974.

Heaths and Heathers. T. L. Underhill. Davis & Charles. 1971.

Palaeobiology of Angiosperms. N. F. Hughes. Cambridge Univ. Press. 1976.

Plant Anatomy. 2nd Ed. K. Esau. Wiley. 1965.

Plant Pathology. G. N. Agrios. Academic Press. 1969.

A Quest of Flowers; the Plant Explorations of Frank Ludlow and George Sherriff. H. R. Fletcher. Edinburgh Press. 1975.